Economics/Social

Regulatory Framework

The Malheur National Forest Plan includes forest-wide management goals to:

- Provide a sustained flow of timber for lumber, fiber, and/or associated wood products at a level that will contribute to economic stability, while providing for regional and national needs.
- Contribute to the social/economic health of communities, which are significantly affected by national forest management.
- Provide an economic return to the public.
- Provide and utilize wood fiber in the form of sawtimber, fiber, and/or associated wood products, while minimizing losses and maximizing outputs in a cost-effective manner, consistent with the various resource objectives and environmental standards.

The Code of Federal Regulations (CFR) is a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government. Minimum specific management requirements are identified in 36 CFR 219.27, to accomplish goals and objectives for the National Forest System. Those management requirements are addressed as follows.

- Section (b) Vegetative Manipulation: (1) Multiple-use; (3) Not chosen for greatest dollar return; (7) Practical transportation, harvest requirements, and preparation and administration.
- Forest Service policy sets a minimum level of financial analysis for project planning (FSH 1909.17).
- The National Environmental Policy Act requires integrated use of the natural and social sciences in all planning and decision-making that affects the human environment. The human environment includes the natural and physical environment, and the relationship of people to the environment (40 CFR 1508.14). Forest Service land management planning regulations require the integration of social science knowledge into forest and regional planning processes (36 CFR 219.5).
- Title 40, Code of Federal Regulations for NEPA (40 CFR 1502.23) addresses non-commodity values, stating "For the purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis, and should not be, when there are qualitative considerations."
- 36 CFR 219.3 – National Forest System Land and Management Planning
- Executive Order 12898 (February 11, 1994) on Environmental Justice directs federal agencies to identify and address agency programs that may have disproportionately high and adverse environmental effects on minority populations, low-income populations, or Indian tribes. The order directs federal agencies to focus attention on the human health and environment effects to ethnic minorities (American Indians,

Hispanics, African Americans, and Asian and Pacific-Islander Americans), disabled people, and low-income groups.

Analysis Method

Analysis Area

Although individuals and communities over a wide geographic area use national forest resources, the residents and businesses of counties near the forest depend most heavily on the availability of the resources. Consequently, the effects of forest management on social and economic factors are strongest within these areas. For this reason, the Malheur National Forest primary zone of influence is defined as Grant and Harney counties in Oregon.

Methodology

Forest Service Handbook (FSH) 2409.18 provides direction to analyze financial efficiency and, if needed, economic efficiency, to identify the most efficient alternative that achieves the desired objectives of the project. Consideration of the proposal that maximizes net public benefits is an important consideration of the decision-making process.

An economic efficiency analysis was completed. It focused on identifiable and quantifiable ecosystem benefits and costs for each alternative in terms of the present net value (benefits minus costs); to assess which alternative comes nearest to maximizing net public benefits (36 CFR 219).

Ecosystem functions provide a broad set of ecosystem services, such as clean water or native forest stands, which are valuable to both human and nonhuman components of the ecosystem. These ecosystem values may be assessed in economic and non-economic terms. Economic valuation provides a partial measure of the full range of ecosystem values in commensurate terms for assessing economic tradeoffs. Non-economic values are necessarily assessed in terms relevant to other disciplines such as ecology or ethics. Changes in ecosystem services must be measurable and quantifiable in like terms, preferably monetary measures, in order to assess a relevant change in economic value (Kohrman, 2003).

This analysis is based on identifiable and quantifiable economic benefits and costs, and is more typically a financial comparison between revenues and costs. The objective of the economic efficiency analysis is to show a relative measure of difference between alternatives, based on direct costs and values used. All dollar values have been discounted in terms of the present net value (2003 dollars). Discounting is a process whereby the dollar values of costs and benefits that occur at different time periods are adjusted to a common time period so that they can be compared. The real (exclusive of inflation) discount rate of 4% was used in the analysis over the planning period.

Present net value is defined as the present (discounted) net value of project benefits minus the present (discounted) net value of project costs. A benefit-cost ratio is the ratio of present net benefits to present net costs. Present net value is a more appropriate measure for comparison between alternatives when land and productive activities are limiting, such as in an environmental analysis of alternatives. A benefit-cost ratio comparison is more appropriate when investment capital is limited, for example when considering budget allocation among a number of different activities.

The tentative advertised bid rates estimated for the Easy Fire Recovery Project reflect the most current volume, price, and cost estimates for this analysis. An initial bid rate was

determined by subtracting the costs associated with logging from the base period prices adjusted for the quality of the material and current market conditions. This rate was further reduced by current appraisal methods (Transaction Evidence Appraisal) to allow for competition between bidders, to determine the tentative advertised bid rate. The computer software program, TEA_ECON, was used for this analysis. The results of that analysis are included in the Project File.

Costs for reforestation and other direct work were developed based on previously experienced costs. Costs for temporary roads and road maintenance were included in the Transaction Evidence Appraisal. Reforestation costs were not included in the sale appraisal.

Non-commodity values were not included in this analysis, because these resources are evaluated under the specific resource section (40 CFR 1502.23). Effects on resources are documented in individual resource sections.

Employment and income effects were derived from response coefficients from the input-output model IMPLAN (Impact Analysis for Planning) for the Roadless Social Economical Report for the Malheur National Forest impact zone, and from the forest-level Timber Sale Program Information Reporting System (TSPIRS) analysis in fiscal years 1996 to 1998 (USDA, 1998; USDA 2000). Job estimates include temporary, permanent full-time, and part-time employment. The estimates do not include unpaid family workers or sole-proprietors.

Existing Conditions

A social and economic analysis entitled *Recovery Efforts 2002 Fires – Draft Environmental Impact Statement: Social and Economic Conditions*, has been completed for the fire recovery efforts on the Malheur National Forest (Kohrman 2003). This document is incorporated by reference under 40 CFR 1502.21. The document presents social and economic affected-environment information for this analysis. It provides information on human uses, social and economic characteristics, and conflicts among various users and uses of the ecosystem. It also discloses: the health of the relationships among the people (community), the forest, and the larger ecosystem; perceptions and values related to ecosystem management; and recent social and economic trends in the economic region. The focus is primarily on, but not limited to, Grant and Harney counties.

Changes in levels of resource use associated with the Easy Fire Recovery Project may affect the major social and economic characteristics of the surrounding geographic area. The affected area or impact zone for the Malheur National Forest consists of Grant and Harney counties in Oregon. Agriculture, manufacturing (particularly wood products), and retail trade are important sources of employment and income in this region. Grant County, for example, has a low level of economic diversity, a high dependence on federal timber and forage, and a low resiliency for change. Reliance on timber and forage from federal lands is moderate to high in counties in the impact zone (Kohrman, 2003).

Many communities are closely tied to the forest in both work activities and recreation. The local communities within an hour or two drive that are anticipated to be directly or indirectly affected by the proposed action, alternatives, and their associated economics include: Prairie City (population 1,080), Burns/Hines (4,565), Dayville (140), John Day/Canyon City (2,740), Long Creek (260), Mount Vernon (650), Monument (150), Seneca (230), Sumpter (175), and Unity (145). Austin, Greenhorn, and Hereford are examples of other smaller

communities also located in the vicinity. Larger cities two or more hours away from John Day include: Baker City (10,160), LaGrande (12,795), Ontario (10,680), Bend (52,029), and Pendleton (16,915) (ODOT, 2001). The nearest metropolitan areas are the Tri-Cities area of Kennewick, Pasco, and Richland in Washington State, and Boise, Idaho.

Employment

Cattle production and forest products provide the core employment for Grant and Harney counties. Forest products industries include 3 major lumber mills and numerous logging companies. Wood products employment totaled 530 direct jobs (i.e. mill workers and loggers) and 131 indirect jobs, approximately 14% of the total non-farm employment in Grant and Harney counties (average annual in 2000). Local government, retail trade, and services employ the most people in Grant and Harney counties (Oregon Employment Department, 2003). The area surrounding the Easy Fire Recovery area is rural, and has disproportionately high unemployment compared with the Oregon state average and the National average. Grant County is in its sixth consecutive year of declining non-farm employment, and "this is quite possibly the longest ongoing downturn any local labor market area in Oregon has ever experienced" (Kohrman, 2003).

Ranchers in Grant and Harney counties, with federal permits in the analysis area, are highly dependent on forage from federally managed lands, compared to other counties in the region. The value of cattle reared on forage from federally managed lands represents more than 10% of total agricultural sales in Grant and Harney counties (Haynes & Horne, 1997). Baker, Wheeler, and Malheur counties are rated moderately dependent (3.57% to 10% of total agricultural sales come from cattle raised on forage from federally-managed lands). Union, Umatilla, Morrow, and Gilliam counties are less dependent (less than 3.57%). Shifts in permitted use of federal grazing allotments change the availability of this forage source. The impact these shifts have on the local economy varies according to the adjustments that local ranchers have to make within their ranching operation.

Recreation-based industries, while prevalent elsewhere in the region, have not been a major contributor to the local economies. Recent efforts indicate that the volume of business is only enough to supplement income, rather than provide a primary source of income (Harney County Chamber of Commerce, 1998-2000). The exception is hunting season, which typically draws larger numbers of people into the area. Stores that sell sporting goods benefit during this period. Recreation-based employment is seasonal and service-oriented, with wages at the lower end of the pay scale (Harney County Chamber of Commerce, 1998-2000). Economic activity based on recreation may have limited growth potential for communities in the area (Kline, 2001). Seasonal limitations, the dispersed nature of recreation within the counties, along with a general lack of large, water-based recreational opportunities, does not create the concentrated numbers of recreationists and readily-identifiable recreation destinations necessary to support many recreation industries (Kohrman, 2003).

Historically, government employment and expenditures have provided a degree of stability in rural communities (Kohrman, 2003). With reduced Forest Service budgets and work force, and a switch to management emphasis that produces generally lower amounts and value of products, federal workforce and program expenditures has not buffered economic downturns as in the past (Oregon Department of Employment, 2001). This situation, combined with fluctuations in the other base industries, has had a significant effect on the economy (Kohrman, 2003).

The communities surrounding the Easy Fire Project Recovery area are considered rural in character, and have a disproportionately high unemployment compared with the Oregon State average of 7.3% and the National average of 5.8%. Unemployment in Baker County for February 2003 was 12.6%, Grant County – 14.6%, Harney County – 13.1% and Malheur County – 11.4%.

Average Wages

Average annual pay per job provides an indication of the quality of jobs in the analysis area. Average income for the affected counties is also below the national and state averages: United States $36,214, Oregon $33,202, Baker County $24,190, Grant County $24,492, Harney County $23,308, Malheur County $23,163 (Oregon Employment Department 2003a). Wages in Grant and Harney counties are lower, primarily due to lower wage rates per hour and a larger number of part-time jobs, compared to the state as a whole (Kohrman, 2003).

Per Capita Income

Per capita income measures economic well being, taking into accounts both population and income changes, although it does not address income distribution. Per capita personal income is total personal income divided by the estimated population. Per capita income in Grant and Harney counties is approximately $22,439 and $22,670 (2003 dollars), respectively. These counties lag behind the statewide average of $29,347 (2003 dollars).

Human Health and Safety

There are concerns about effects to the human health and safety of people using the project area and roads accessing the area. Another issue raised was the safety concern to workers and the public from hazard trees along roadsides.

Environmental Justice

The population of the area is predominately white, followed by American Indians. The region is sparsely populated, and contains low populations of minorities (5.5% of the Grant County population, 5.4% of Baker County, 9.9% of Harney County, and 31.2% of Malheur County (of which 25.6% is of Hispanic origin with the majority living east of Vale) (Kohrman 2003; United States Census Bureau 2003). The primary American Indian tribes involved are the Burns Paiute and Umatilla. With the exceptions of the Burns Paiute and Hispanics east of Vale, minorities are scattered throughout the counties.

Poverty rates provide some indication of the percentage of the population in surrounding communities with low-incomes. Poverty rates for both Grant and Harney counties are 13.7%. The Oregon statewide average rate of persons living below poverty is 11.6% (Kohrman, 2003).

Data regarding minorities or people with disabilities employed in the region in the timber, mining, ranching, road construction, forestry services, and recreation sectors is unavailable. Some firms contracted by the Forest Service for reforestation work have traditionally hired Hispanic workers that comprise a migratory workforce in the area. Asian and Pacific Islanders uses of the area include commercial mushroom harvesting and developed camping associated with this activity. Some contracts are reserved for award to minority businesses under the USDA Office of Small and Disadvantaged Business Utilization and the Small Business Administration, although overall contract amounts to these groups has declined since 1998 (Kohrman, 2003).

Environmental Consequences

The social and economic effects of the various proposed management alternatives were assessed in terms of viability of harvestable timber, employment supported by the alternatives, and the economic efficiency for relative comparison between alternatives.

Viability of Timber Harvest

Direct and Indirect Effects

All Alternatives

The area proposed for commercial harvest within the Easy Fire Recovery Project area was analyzed to determine the economic viability of harvesting timber, by determining the tentative advertised bid rates per hundred cubic feet ($/ccf). The tentative advertised bid rates estimated for the Easy Fire Recovery Project reflect the most current volume, price, and cost estimates for this analysis. All alternatives that harvest timber would produce positive bid rates, indicating that the project would provide a viable harvest proposal. Based on this analysis, Alternative 2 provides the highest tentative advertised bid rate at $50.36/ccf, and therefore the highest potential revenue from the sale of timber. Alternative 3's bid rate is slightly lower, at $46.80/ccf, followed by Alternative 4 with the lowest bid rate of $39.33/ccf. Alternative 1 and Alternative 5 would not harvest any timber, and therefore would not produce any revenue or benefits to wood products industries. Advertised bid rates have fluctuated over the last few years, reflecting the volatility of the timber market. Changes to prices would likely occur at the time of the appraisal, depending on actual market conditions at that time.

The 1990 Malheur National Forest Land and Resource Management Plan (LRMP) established an allowable sale quantity (ASQ) for the forest of 38.4 million cubic feet or 211 million board feet (MMBF) average per year. An ASQ is an upper limit for the plan period, not proposals for sale offerings or an assigned target. Actual sale levels depend on factors such as limitations of modeling, changes in law and regulations, changes in social-economic values, listing of threatened and endangered species, changes in budgets, and site-specific conditions. The Regional Forester amended this plan in 1994, through Amendment No. 2 (Eastside Screens), and by PACFISH and INFISH in 1995, in response to some of these changing factors. Table SE-1 compares the Malheur National Forest's annual offered timber volume with its assigned target timber volume for the fiscal years since the 1990 LRMP went into effect. Accomplishment of timber targets is based on volume offered.

Table SE-1: Malheur National Forest Timber Offer by Fiscal Year 1991 to 2002

Fiscal Year	Target Volume MMBF	Offered Volume MMBF
1991	229.0	201.6
1992	220.0	100.8
1993	197.0	71.7
1994	101.0	33.1
1995	85.0	66.9
1996	100.0	80.9
1997	110.0	38.9
1998	95.0	77.1
1999	63.5	34.1
2000	45.0	17.5
2001	36.7	15.4
2002	24.2	2.7

In response to a request by then Oregon Governor Kitzhaber, the Blue Mountains Demonstration Area published in 2002 an assessment entitled *Assessment of Timber Availability from Forest Restoration with the Blue Mountains of Oregon* (USDA, 2002). The assessment describes management actions over the past decade, current vegetation conditions where a reliable supply of wood could be available, estimations of the quantity and type of forest timber products that may result from forest restoration actions, and a market analysis for potential timber products and the associated economic impacts on individual communities.

This assessment concludes that 71% of the national forest lands in the Blue Mountains of Oregon were not available for substantial and sustainable harvesting of timber. Only minimal amounts of timber would be harvested during restoration treatments of these lands, and prescribed fire may be the primary tool available to accomplish fuels reduction and thinning. This trend would likely continue because there is no anticipated change in management direction. The assessment further concludes that the remaining 29% of the national forest lands that are available for substantial and sustainable timber harvest (Active Forestry lands) was actively managed over the last three decades. Up to a third of these lands have experienced timber harvest or non-commercial thinning since 1988. Approximately 58% of these Active Forestry lands are currently overstocked; however, nearly half of these overstocked lands are suitable only for non-commercial thinning treatments, yielding only incidental amounts of merchantable timber. This trend is also likely to continue.

Selection of Alternative1 (No action) and Alternative 5 has the potential to continue the decline of timber-related employment in the rural communities of Baker, Grant, Harney, and Malheur counties. Alternatives 2,3, and 4 would provide some short-term (1 to 2 years) economic relief. Various amounts of large diameter wood (greater than 12 inches diameter at breast height) would be salvaged, rather than the biomass utilization brought about by

thinning smaller diameter trees. This larger diameter wood is the type of material needed to support the 3 large-diameter saw mills operating in the John Day/Prairie City area. The amount of local economic relief would be determined by whether the purchaser is local or distant, what mill(s) local or distant actually receives the logs, and the price for lumber.

Cumulative Effects

All Alternatives

These cumulative economic effects could cause cumulative "quality of life" social effects. Continued loss in timber-related jobs could affect the remaining infrastructure and capacity in the local rural communities, and could disrupt the dependent local goods and services industries. Diversification opportunities for these local rural economies are currently limited, and this trend is expected to continue until economical biomass utilization can be further developed (LeVan, 1998).

Employment

Direct and Indirect Effects

All Alternatives

The primary effect on timber harvest-related employment would occur from commercial harvesting associated with the alternatives over the next two years. Financially viable sales would be necessary to provide opportunities for timber harvest-related employment. Levels of harvest volume by alternative would affect employment and income in several ways:

- *Directly* - effects attributable to employment associated with harvesting, logging, and mills and processing plants for sawtimber, pulp, chips, veneer, and plywood;
- *Indirectly* - effects attributable to industries that supply materials, equipment, and services to these businesses; and
- *Induced* - effects attributable to personal spending by the business owners, employees, and related industries.

No harvest-related activities would occur under Alternative 1 and Alternative 5, and therefore no contribution to direct, indirect, or induced employment and income associated with timber harvesting would result from the project. Declining trends in timber harvesting from National Forest System (NFS) lands would continue in the future, and contribute to declines in wood products employment and associated indirect employment over the next two decades. Changes in the economic base and wood products infrastructure for the impact area would also continue to be influenced by fluctuations in market prices, international market conditions, changes in technology, and industry restructuring.

The overall employment and income effect from Alternatives 2,3 and 4 would continue to support the wood products manufacturing component of the economic base of the impact area. The magnitude of the economic effects would be limited to one year, associated with the harvesting activities. Alternative 2 would support the highest level of employment, at 66 jobs over the two-year period. Alternative 4 is the lowest with 27 jobs, with Alternative 3 supporting 51 jobs. Any individual county or community in the impact area could experience greater benefits in the short-term (2-3 years), particularly the communities highly specialized in wood products manufacturing. However, several factors would influence the ability of any one county or community to experience the largest extent of the harvest-related employment and income effects. The financial viability of the timber sale proposals would

influence whether potential purchasers closest to the project area could be competitive with other purchasers, to acquire the majority of the supply of wood. Employment projections would depend on other factors such as market conditions, quality and quantity of the volume offered for sale, timing of the offerings, and financial conditions of local firms.

The distribution of economic impacts would depend on the location of the timber purchaser awarded the contracts at the time of the sale, the availability of equipment and skills in the impact area, and the location and availability of the wood processing facilities and related infrastructure. Given the size of the potential volume compared to offerings in the last year from NFS lands across the Blue Mountains, several mills located in other counties in Northeast Oregon would be potentially interested in the supply of wood offered. Alternatives 2,3 and 4 require helicopter logging. There are no locally owned, helicopter logging businesses; all locally owned logging businesses use ground-based equipment. Therefore, even if a locally-owned logging business is the purchaser of the proposed timber sales, a portion of the income generated from these sales will leave the local area to a sub-contracting helicopter business. The reverse is also true; if a helicopter logging business purchases the sales, they may hire local loggers to perform a portion of the work. Alternative 2 proportionately would return the least amount of income to local logging businesses, because it requires the most amount of helicopter logging (545 acres); Alternative 4 proposes 265 acres; and Alternative 3 proposes 308 acres. Alternative 2 proposes 979 acres of ground-based timber harvesting, and 253 acres of skyline. Alternative 3 proposes 837 acres of ground-based timber harvesting and 153 acres of skyline. Alternative 4 proposes 633 acres of ground-based harvesting and 58 acres of skyline.

Annual timber-related employment supported by timber harvested from the Malheur National Forest for the years 1999-01 averaged 388 direct jobs. Annual harvest for these years averaged 39 MMBF. Employment supported by commercial harvesting in Alternative 2 would support approximately17% toward this level of annual employment. Alternative 3 would support approximately, 13% with Alternative 4 supporting approximately 7% toward this level. Alternative 1 and 5 would not provide harvest opportunities and would not support employment in the impact zone from timber harvesting.

Cumulative Effects

All Alternatives

Other employment would continue to occur as a result of other timber sales in progress, domestic-livestock grazing, recreation activities, and other special use receipts across the Forest. Commercial collection of non-timber forest products, such as mushrooms, could continue to occur, although the quantity of harvest is unknown. In addition, other employment opportunities would also be provided by restoration and enhancement activities outlined for the Easy Fire Recovery Project, and would depend on the level of funded projects.

Economic Efficiency

Direct and Indirect Effects

All Alternatives

An economic efficiency analysis was completed. It focused on identifiable and quantifiable ecosystem benefits and costs for each alternative, in terms of the present net value (benefits

minus costs); to assess which alternative comes nearest to maximizing net public benefits (36 CFR 219.3).

Measurable and quantifiable economic market benefits identified in the Easy Fire Recovery Project include discounted revenue from timber volume proposed for harvest. Measurable and quantifiable costs at the project level include direct costs to the Forest Service for preparing and administering the commercial timber sales, and implementing other restoration activities, such as reforestation.

Table SE-2: Present net benefit, present net costs, and present net value.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Present Net Benefits					
Timber Value	$0	$639,125	$457,575	$202,494	$0
Present Net Costs					
Preparation and administration	$0	$372,226	$286,810	$151,061	$326,788
Restoration and mitigation projects	$0	$2,938,500	$2,938,500	$2,938,500	$2,002,740
Fuel Reduction	$0	$771,132	$650,884	$563,738	$1,000,400
Present Net Value					
Present Net Value	$0	-$2,416,156	-$2,493,413	-$2,585,265	-$3,329,928

Alternative 2 would have the greatest present net monetary value of all the alternatives, due primarily to the higher volume. Alternative 3 present monetary net values would have a slightly lower value, due to less volume being removed. Alternative 4 has the lowest present net value of the salvage alternatives. Low volumes per acre contribute to the lower net value due to leaving 13 snags per acre. This in turn reduced the number of acres to be treated because thirty units either didn't contain any remaining volume to treat or volume levels were so low that entry was uneconomical. Costs for sale preparation and administration vary by alternative, based on the amount of timber harvested and acres treated. Alternative 1 would have no costs associated with harvesting, although ongoing costs associated with management of the area would continue. Alternative 5 would have cost associated with restoration activities but no timber value to offset these costs therefore producing a greater negative value of -$3,329,928. Cost for restoration and mitigation contracts include preparation and contract administration costs.

In addition to use values, existence values otherwise referred to as passive, nonuse, or preservation values may capture important economic value to the public (Kohrman, 2003). Although these benefits are important components of the ecosystem services provided to humans, the production relationship between ecosystem functions and ecosystem services (such as changes in recreation visitor days, fishing days, animal unit months, or fish population) is not well defined or measurable at the project level. Certainly not in terms that provides meaningful comparisons of commensurate dollar values. Potential benefits include improvements to soil productivity, reduced erosion, water quality improvements in temperature, and terrestrial and aquatic habitat improvement. Potential improvements in fish

habitat would increase fingerling survival rates, overall fish population levels, and recreational fishing opportunities.

Other potential qualitative economic benefits or costs from the alternatives include changes to the diversity, quality, and quantity of wildlife habitat for both game and non-game terrestrial species. The economic value of big-game hunting would depend on how changes in population levels and spatial distribution of game animals affect either the quality or intensity of the hunting experience. Consequently, the overall level of hunting would change with corresponding economic impacts from hunting-related expenditures. Changes in non-game population levels and diversity would affect wildlife viewing, photography, and other non-consumptive uses of the area.

Other opportunity or externalized costs that would potentially occur include damage to soils from harvest operations in tractor units, resulting in long-term losses in soil productivity and potential timber harvest, losses in wildlife habitat as a result of salvage of large dead trees, or increases in sedimentation to downstream fish habitat from erosion in the fire area. These costs are not well defined or measurable at the project level in terms that provide comparison of commensurate dollar values.

Human Health and Safety

Health effects are limited in scope and duration. This analysis summarizes the human health and safety effects described in other sections of the FEIS.

Direct and Indirect Effects

No-Action Alternative (Alternative 1)

Alternative 1 would not improve road access. Deteriorating conditions of standing fire-killed trees along roads would result in a decline in user safety, without additional analysis and corrective measures. In order to maintain public safety, some roads would be closed to motorized vehicles. Normal road maintenance would continue to be scheduled, but road conditions would continue to decline due to the effects of the fire.

Since there would be no tree planting, there would be no risk to forest worker health and safety from working under hazardous trees.

Alternatives 2, 3, and 4

With commercial timber harvest, the level of road use would increase within the project area and accessing the area. Increases in the level of use on roads will potentially increase the number of encounters between heavy equipment for logging and recreational visitors, and increase the likelihood of accidents in the short-term (2-3 years). Reconstruction design standards for width, brushing, and hazard trees would mitigate potential encounters and provide safer access on current roads in the long-term, after the harvesting activities are concluded. Directional signing and public information about logging activities would lessen encounters and increase safety. During helicopter yarding operations, the road system would be closed to public access. This closure would be necessary because of safety issues involving logs flown across these roads and the increase in log truck traffic.

Worker health effects and safety from all phases of logging operations would potentially occur. The work environment would be physically demanding and hazardous.

Planting trees in mature forest areas that burned but are not proposed for salvage (areas outside proposed harvest units) would present safety hazards to tree planters that would need

to be mitigated due to the presence of hazard trees. Alternative 2 would have the fewest such acres, followed by Alternative 3, and Alternative 4.

Alternative 5

Deteriorating conditions of standing fire-killed trees along roads would result in a decline in user safety, without additional analysis and corrective measures. In order to maintain public safety all roads within the fire would be closed to motorized vehicles. Normal road maintenance would continue to be scheduled but roads would continue to decline due to the effects of the fire. The costs of road maintenance and reconstruction would increase in the future due to further declines in the system.

Planting trees in mature forest areas that burned but are not proposed for salvage (areas outside proposed harvest units) would present safety hazards to tree planters that would need to be mitigated due to the presence of hazard trees. Alternative 5 would have more of these acres than all the other alternatives.

Cumulative Effects

All Alternatives

Because of past, present, and reasonably foreseeable future actions, there are economic and social cumulative effects due to road closures and timber harvest. Due to decreased roads funding for the Malheur National Forest over the past several years, there is a cumulative effect as the Forest continues to reduce road densities in other project areas in order to meet budgetary constraints and other resource needs. The costs of road maintenance and reconstruction would increase in the future, due to further declines in the system. Road closures and decommissioning would probably be considered and implemented in future timber sale areas. Socially, this means the current level of access by roads would decline. Recreation, acquisition of non-timber forest products, and other opportunities dependent on road access, would also decline in areas of the road closure.

Environmental Justice

The analysis focuses on potential effects from the project to minority populations, disabled persons, and low-income groups.

Direct and Indirect Effects

No-Action Alternative (Alternative 1)

All current uses of the National Forest System lands would continue, including recreation, harvesting of non-timber forest products, special-use permits, subsistence uses, and spiritual/aesthetic uses. Effects to minority populations, disabled persons, and low-income groups would not be disproportionate with other users of the National Forest System lands.

Alternatives 2, 3, 4 and 5

These alternatives provide a variety of opportunities for potential contracts. The alternatives would have no impact on the contracting process or the USDA Small Business Administration program for reserving contracts for minority groups for tree planting, precommercial thinning, and road restoration. Employment and income would be available to all groups of people, subject to existing laws and regulations for set-asides, contract size, competition factors, skills and equipment, etc.

Set-asides for Small Business Administration Contracting opportunities would not be affected. Employment by firms that have hired Hispanic workers or other minority groups or low-income workers associated with reforestation or other potential contracting needs would not differ from those employed in the sectors as a whole. In the short-term (3-5 years), reforestation needs would potentially benefit this group. Alternatives 2, 3, and 4 would plant about 3,918 acres Alternative 5 would plant 3,002 acres.

There is no existing information on how much use the area receives from minority and low-income populations. It is estimated that this area receives limited use because of the road conditions prior to the 2002 wildfire and a majority or the roads are closed to the public. The anticipated direct and indirect social effects to these populations will not change because no new closures are planned under this EIS. Opportunities for all groups of people to collect species from disturbed and non-disturbed sites would be maintained by all alternatives, and no disproportionate effect is anticipated to subsets of the general population.

None of the alternatives would have disproportionately high and adverse environmental effects on minority populations, low-income populations, or Indian tribes.

Consistency with Direction and Regulations

The Forest Plan contains several goal statements:

- Provide a sustained flow of timber for lumber, fiber, and/or associated wood products at a level that will contribute to economic stability, while providing for regional and national needs.
- Contribute to the social/economic health of communities, which are significantly affected by national forest management.
- Provide an economic return to the public.
- Provide and utilize wood fiber in the form of sawtimber, fiber, and/or associated wood products while minimizing losses and maximizing outputs in a cost-effective manner, consistent with the various resource objectives and environmental standards.

Otherwise, management objectives and standards for economics are not specifically addressed in the Forest Plan. This analysis attempts to display the effects to economic efficiency for this project. In this regard, all alternatives are consistent with the Forest Plan.

All social and economic elements are consistent with current regulations.

Irreversible and Irretrievable Commitments

There are no irreversible and irretrievable commitments of resources that may result from the alternatives with respect to socio-economics because the alternatives do not permanently change the use of the area.